

REMARKS

In the Office Action under reply, claims 1, 2, 4, 5, 7, 15, 18 and 21, all the claims remaining in this application, were rejected under 35 USC 103 as being obvious in view of U.S. Patent 6,259,734 (Boon). Boon is newly cited. The prior rejection of the claims based upon the combination of Son and Shiiyama was withdrawn. It is respectfully submitted, however, that claims 1, 2, 4, 5, 7, 15, 18 and 21, as presented herein, are patentably distinct over Boon; and the withdrawal of the rejection of these claims is respectfully solicited.

Claim 1, as an example, is directed to an image decoder that dynamically varies the picture quality of a decoded motion picture depending upon an estimate of the amount of energy anticipated to decode and display the motion picture data that has not yet been decoded. The estimated energy needed to decode such motion picture data is a function of the amount of energy that had been consumed previously to decode the motion picture data. If the difference between the anticipated energy that is needed to decode and display the motion picture data and the remaining energy of the power source is too low, the playing quality of the motion picture data is reduced by reducing the number of bits per pixel used to display the decoded motion picture data.

It is respectfully submitted that Boon fails to disclose or suggest the above-identified features of Applicant's claim 1. Boon is concerned with decoding motion picture data "without degrading the precision of prediction data" (col. 5, line 23) so that the number of pixels in a reference block always is identical to the number of pixels constituting a target block (col. 5, line 66 to col. 6, line 2). Thus, it is seen at the outset that Boon is concerned with maintaining picture quality, whereas the present invention recognizes the need to reduce picture quality.

In applying Boon to claim 1, Boon's embodiment 7, described at col. 36, line 37 to col. 39, line 49 is relied upon. While Applicant's representative recognizes that the entire Boon reference has been used in the rejection of the claims, Applicant's representative also appreciates that the Examiner is of the view that the specific portion noted above is of particular relevance to the claims. Accordingly, the following discussion focuses on this portion of particular relevance.

Boon monitors the voltage of the power source by comparing the output voltage of that source to reference voltages. Boon also measures the time required for decoding one frame of an image to decide whether the arithmetic load on the loading process exceeds a reference load (col. 6, lines 49-59). Depending upon the level of the power supply output voltage relative to the reference voltages, a prediction block formed of $K \times K$ pixels or a prediction block formed of $K' \times K'$ pixels is produced, where the $K' \times K'$ block is larger than the $K \times K$ block (see Figs. 2 and 18), and the $K \times K$ block is referred to as fractional pixels. This description is repeated at col. 39, lines 11-27, wherein processing using $P \times Q$ pixel blocks is carried out when the the battery supply voltage is high and processing using $M \times N$ pixel blocks is carried out when the battery supply voltage is low, where $P > M$ and $Q > N$. As a result, even when fractional pixels are used, the image quality is maintained.

Significantly, Boon does not suggest or recognize that the number of bits per pixel should be reduced, thereby reducing the quality of the motion picture data, as a function of the energy remaining in Boon's power supply relative to the amount of energy needed to decode and display all of the remaining motion picture data. Moreover, Boon simply measures his battery power supply level and compares that level to reference voltages. He does not measure the amount of energy that was consumed during a previous decoding time interval, nor does he estimate, as a

function of the amount of energy that was consumed, the amount of energy that will be needed to decode and display the remaining motion picture data.

Claim 1 recites the following features that are not suggested by Boon:

means for measuring the amount of energy that was consumed during a decoding time interval;

means for estimating the amount of energy anticipated to decode and display remaining motion picture data as a function of the measured amount of energy that was consumed;

controlling means for controlling the decoding means ... to dynamically control the playing quality of the motion picture data by selectively reducing said number of bits per pixel.

In the Office Action, Boon is construed as having a decoder that provides an adjustable number of bits per pixel of the decoded motion picture. The Abstract and Fig. 14 were relied upon as a basis for this interpretation of Boon. However, as noted above, Boon does not suggest adjusting the number of bits per pixel. Rather, Boon simply uses a larger or smaller block of more or less pixels in his decoder. Boon also was construed in the Office Action as measuring the amount of energy that was consumed during a decoding time interval. On the contrary, Boon simply measures the amount of energy left in his battery. This has nothing to do with the amount of energy that has been consumed, especially since the amount of energy left in the battery can vary drastically, even if the amount of energy that has been previously consumed remains the same. That is, if the initial battery level is high, then the amount of energy left in the battery will be higher than the amount of energy left if the initial battery level is low, even if the very same amount of energy has previously been consumed. Still further, Boon is construed as controlling his decoder on the basis of the difference between the anticipated energy needed to decode the motion picture data and the remaining energy of the power source. But, Boon provides no

description of anticipating the amount of energy that will be needed for decoding. Rather, Boon simply checks his battery level. Finally, Boon is construed as describing reducing the number of bits per pixel to dynamically control the picture quality. But, Boon adjusts the size of his reference block by using more or less pixels in a block -- he does not even remotely suggest that the number of bits per pixel should be reduced.

Therefore, in view of the significant differences between the recitations of claim 1 and the disclosure of Boon, it is respectfully submitted that one of ordinary skill in the art, after reading and understanding Boon would not be enabled by that reference to make and use Applicant's invention of claim 1. Accordingly, the withdrawal of the rejection of claim 1 as being obvious in view of Boon is respectfully requested.

Claim 2 depends from claim 1 and, therefore, includes all of the limitations recited by claim 1. Consequently, claim 2 differs from Boon for the same reasons argued above. In addition, claim 2 calls for load monitoring means, which the Office Action interprets as being described at col. 36, lines 46-65. But Boon refers to a "power supply voltage monitor 722" which is quite different from the "load monitoring means" of claim 2.

Independent claims 4 and 7 were rejected for the same reasons used to reject claim 1. Accordingly, the arguments set forth above in connection with claim 1 are equally applicable to claims 4 and 7. Therefore, the rejection of claims 4 and 7 should be withdrawn because these claims recite features not found in Boon.

Claim 5 was rejected for the same reasons used to reject claim 2. Therefore, in view of the arguments presented with respect to claim 2, the rejection of claim 5 should be withdrawn.

Claims 15, 18 and 21 were rejected in view of the Abstract of Boon and also in view of Figs. 14 and 16 of Boon. Claim 15 is typical and calls for:

a controlling means for ... controlling the decoding means to dynamically control the number of bits per pixel of the decoded image data on the basis of said anticipated time [needed to display the frames].


As pointed out above, Boon does not "dynamically control the number of bits per pixel" recited by Applicant's claims. Rather, Boon refers to "fractional pixels" which are described as the number of pixels in a reference block, not the number of bits per pixel. It is manifest, the number of pixels in a block is totally different from the number of bits that constitute a pixel. Therefore, since Boon fails to describe the image decoder of claim 15, the decoding method of claim 18 and the program embodied in the computer readable medium of claim 21, Boon is not capable of anticipating these claims. Accordingly, the withdrawal of the rejection of claims 15, 18 and 21 is respectfully solicited.

Statements appearing above in respect to the disclosures in the cited references represent the present opinions of the undersigned attorney and, in the event the Examiner disagrees with any of such opinions, it is respectfully requested that the Examiner specifically indicate those portions of the references providing the basis for a contrary view.

Please charge any additional fees that may be needed, and credit any overpayment, to our Deposit Account No. 50-0320.

Respectfully submitted,

FROMMER LAWRENCE & HAUG LLP
Attorneys for Applicants

By: 
William S. Frommer
Reg. No. 25,506
Tel. (212) 588-0800